

BEFORE
THE PUBLIC SERVICE COMMISSION OF
SOUTH CAROLINA
DOCKET NO. 91-004-E - ORDER NO. 91-930 ✓
OCTOBER 31, 1991

IN RE: Semi-Annual Review of Base Rates)	ORDER DENYING
for Fuel Costs of Carolina Power)	PETITION FOR
& Light Company)	REHEARING AND
)	RECONSIDERATION

This matter is before the Public Service Commission of South Carolina (the Commission) on Carolina Power & Light Company's (CP&L's or the Company's) Petition for Rehearing and Reconsideration of Order No. 91-819 (September 30, 1991). Order No. 91-819 addressed the recovery of CP&L's fuel replacement costs for the period April 1991 through September 1991.¹ After a thorough consideration of the evidence presented at the hearing, the applicable statutory and case law, prior orders of this Commission, and after a review of Order No. 91-819, the Commission denies CP&L's Petition for Rehearing and Reconsideration for the reasons explained below.

1. CP&L contends that the Commission improperly applied principles of tort law to determine whether it should permit the Company to recover the fuel replacement costs associated with the

1. The parties stipulated that the Commission would also hear and consider evidence relating to nuclear outages beginning August 16, 1990, September 27, 1990, and October 12, 1990, at Brunswick Unit 2.

diesel generator outage at Brunswick Units 1 and 2 and the generator relay outage at Brunswick Unit 1. CP&L instead argues that the Commission should have applied the traditional prudence standard as it did in Order No. 88-864 (August 29, 1988), Docket No. 88-11-E, in its evaluation of the reasonableness of the utility's actions. The Commission disagrees.

South Carolina Code Ann. §58-27-865(E) (Supp. 1990) which governs the recovery of fuel costs by electrical utilities states as follows:

The Commission shall disallow recovery of any fuel costs that it finds without just cause to be the result of failure of the utility to make every reasonable effort to minimize fuel costs or any decision of the utility resulting in unreasonable fuel costs, giving due regard to reliability of service, economical generation mix, generating experience of comparable facilities, and minimization of the total cost of providing service.

In Order Nos. 91-636 (August 6, 1991) and 91-762 (September 6, 1991) this Commission concluded that tort law principles applied to its consideration of the recovery of fuel costs by electrical utilities. In those Orders the Commission explained that the language of Section 58-27-865(E) supported the use of negligence principles.

CP&L correctly notes that the Commission applied the traditional prudence test in Order No. 88-864. However, that Order was issued in response to a requested rate increase and addressed the reasonableness of CP&L's expenditures in the construction of the Harris nuclear plant. Unlike a rate case proceeding, the present case concerns the recovery of CP&L's fuel costs and is

governed by a statute to which this Commission has already determined that tort principles are applicable. Accordingly, the Commission finds no error in not applying the traditional prudence standard and, therefore, denies CP&L's Petition for Rehearing and Reconsideration on this issue.

2. CP&L asserts the Commission did not properly consider the overall performance of the Company's generation system because it failed to use the Company's performance to mitigate its disallowance. The Commission disagrees.

As previously stated above, Section 58-27-865(E) requires the Commission to "disallow recovery of any fuel costs that it finds without just cause to be the result of failure of the utility to make every reasonable effort to minimize fuel costs or any decision of the utility resulting in unreasonable fuel costs, giving due regard to reliability of service, economical generation mix, generating experience of comparable facilities, and minimization of the total cost of providing service." Emphasis added.

In this case the Commission did give "due regard" to the Company's generation mix, its fossil unit and the capacity factor of each of its fossil units, and the capacity factor of each of its nuclear plants. Order, p. 3. The Commission considered those factors but ultimately determined to disallow recovery of \$3,179,001 in fuel costs. While in one other recent fuel proceeding, Docket No. 90-4-E, the Commission determined that these factors could reduce the disallowance, under the circumstances in this case, the Commission determined that these factors were

insufficient to reduce the disallowance. Unlike the situation in Docket No. 90-4-E where there was one nuclear outage and the Commission concluded that the Company's overall performance should be used to reduce the associated disallowance, in this case unreasonable actions of the utility caused either the extension of or resulted in seven nuclear outages; two of these outages lasted over five weeks; and each of the Company's four nuclear units experienced at least one outage for which recovery of fuel costs was disallowed. In its decision, the Commission determined that the circumstances of the case outweighed any mitigating factor that may have been presented by the Company's overall performance. Accordingly, the Commission denies the Petition for Rehearing and Reconsideration on this issue.²

3. CP&L contends the Commission's conclusion that the extension of the scheduled refueling outage at Robinson Unit 2 due to an unlatched control rod was the result of unreasonable actions by the Company is not supported by substantial evidence in the record. The Commission disagrees.

In his direct testimony CP&L witness Coats testified that the cause of the control rod unlatching had not been determined, that despite "extensive reviews" the Company found no mechanical

2. The Commission notes that its decision not to reduce the disallowance because of the Company's overall performance is not inconsistent with Order No. 90-1108 in Docket No. 90-4-E. In Order No. 90-1108 the Commission emphasized that Section 58-27-865(E) does not "specify the exact manner in which these factors are to be considered, or the weight to be given to each factor." Order, P. 9.

problems with the equipment, and that "[b]ased on the investigations performed, it was his opinion that the event represents an isolated and unavoidable occurrence." Coats, Pre-filed testimony, p. 13. Nucor witness Hobbs testified that "there is insufficient evidence to demonstrate whether CP&L acted reasonably or prudently regarding the unlatched control rod problem".... "At this point, it seems likely that personnel error caused the problem." Hobbs, Pre-filed testimony, p. 31.

When challenged, the Company has the burden of proof to establish that its actions were reasonable.³ The Commission finds that on the above evidence alone, CP&L failed to meet its burden of proof in regard to the unlatched control rod.

Moreover, additional evidence in the record supports the Commission's conclusion that CP&L's actions in regard to the unlatched control rod were unreasonable. CP&L's internal memoranda concerning discussions with Westinghouse and Combustion Engineering indicates that the Company is of the opinion that unreasonable personnel error on the part of its contractor, Combustion Engineering, most probably caused the unlatching of the control rod. Hearing Exhibit 25.⁴

4. CP&L contends there is no substantial evidence in the record to support the Commission's conclusion that the damage to

3. In his opening statement, counsel for CP&L admitted that the Company had the burden of proof, when challenged, to establish that its actions were reasonable. TR., Vol. 1, p. 10, line 8.

4. CP&L does not argue that it is not responsible for the unreasonable actions of its contractors.

the right camshaft of diesel generator #1 was caused by an unreasonable act of the Company or its vendor technical representative. CP&L claims that neither its own employees nor the vendor technical representative had reason to believe that removal of adjacent bearings #8 and #9 would damage the magnetic speed probe and that, in fact, the vendor technical representative did not know the magnetic speed probe was located on the camshaft gear housing instead of on the main shaft flywheel. CP&L argues that the removal of the "adjacent bearings was not only reasonable". . . but, "was required in order to perform the work." Petition, p. 9. Finally, CP&L asserts that its mechanics did comply with the work order because they followed the instructions of the vendor technical representative. The Commission disagrees.

In Order No. 91-819, the Commission made the following findings of fact and conclusions of law in regard to the Brunswick Units 1 and 2 Diesel Generator Outage:

During cleaning and maintenance of its diesel generators, CP&L found metal particles located in diesel generator #1's lube oil strainer. To investigate the source of this debris, CP&L personnel prepared a work request which instructed maintenance crews to 'remove and replace all camshaft bearings.... removing every other (sic) one until all bearings have been replaced' in accordance with the diesel generator technical manual and in accordance with the technical representative's instructions. Hearing Exhibit 7. This was the first time that Brunswick personnel had ever removed and replaced the camshaft bearings.

According to the testimony at the hearing, CP&L's day shift began removing every other bearing from the camshaft, cleaned the camshaft, barred over the engine, cleaned the exposed camshaft, and then replaced the bearing before

removing another bearing. The day shift stationed a mechanic at each end of the camshaft during its rotation to detect problems. Due to its location next to the thrust collar, the day shift encountered difficulty in removing camshaft bearing #9 and contacted the technical representative who was on-site but was not overseeing the camshaft maintenance activities. The technical representative instructed the mechanics to remove bearing #8 in order to obtain access to bearing #9. The day shift removed bearings #8 and #9, rotated the camshaft, then left for the day. The night shift came on duty and also rotated the camshaft. The day shift had not informed the night shift to station a mechanic at the ends of the camshaft to detect if there were any problems.

In performing this cleaning and replacement of the bearings, diesel generator #1's right side camshaft was damaged and both Brunswick Units 1 and 2 were placed into forced outages⁵ on March 29, 1991. CP&L witness Coats testified that the damage to the camshaft occurred when bearings #8 and #9 were removed; he explained that removal of the adjacent bearings caused a slight deflection of the camshaft and that this deflection broke off the tip of a magnetic speed probe located in close proximity to the gears of the diesel generator. Coats stated that neither the technical representative nor the plant mechanics knew of the location of this speed probe. Coats testified that when the night shift mechanics rotated the camshaft with bearings #8 and #9 removed, the broken tip of the speed probe became lodged in the gearing and continued rotation led to wedging of the probe between the gears which caused additional deflection and the scoring of the camshaft on a bearing housing. Coats concluded that had it not been for the unknown location of the speed probe, the camshaft would not have been damaged. Coats testified that the technical representative's instructions to remove adjacent bearings #8 and #9 were reasonable in that the representative did not know of the location of the

5. Because Brunswick was operating under a Limiting Condition for Operation (LCO) which specified how long the plant could operate without all of its diesel generators in service, both Brunswick units were required to be shut down while the repairs to diesel generator #1 were made.

speed probe. Coats asserted that CP&L reasonably relied on the technical representative's instructions. Brunswick Unit 1 was returned to service on May 7, 1991, and Brunswick Unit 2 was returned to service on May 8, 1991.

Nucor witness Hobbs testified that this outage was caused by damage to the diesel camshaft which was the result of the rotation of the camshaft with bearings #8 and #9 removed. Hobbs testified that the damage to the camshaft was the result of unreasonable personnel error. In addition, Hobbs testified that CP&L took unreasonable actions (1) by failing to thoroughly research and determine the correct procedure for removing and replacing the bearings and cleaning the camshaft, (2) by failing to draft sufficiently detailed work instructions, (3) by management failing to properly brief the technical representative on his role in the work process, (4) by the technical representative failing to recognize the potential for damage and by failing to communicate the proper procedure to remove bearing #9 to CP&L's mechanics, (5) by management failing to properly supervise the work procedure, (6) by personnel failing to adequately communicate with each other, (7) and by using inexperienced personnel on the night shift to rotate the camshaft.

Staff witness Walsh testified that when bearings #8 and #9 were removed, the camshaft was left without adequate support. Walsh testified that the inadequate support caused the camshaft to drop and break off the tip of the speed probe and that this tip became wedged in the gears which led to the scoring of the camshaft. Walsh testified that, in his opinion, the damage to the camshaft was caused by the unreasonable actions of CP&L personnel. In addition, Walsh stated that the Company's lack of detailed work instructions for the camshaft project was unreasonable.

The Commission concludes that the diesel generator outages at Brunswick Units 1 and 2 were caused by unreasonable actions on the part of CP&L. Although the specific cause of the damage to diesel generator #1's right camshaft is subject to dispute, the Commission concludes that the maintenance crew's decision to remove adjacent bearings #8 and #9, in spite of work order instructions which specified to remove every other

bearing, was unreasonable. CP&L personnel knew that work on the camshaft could cause it to deflect and were stationed at the camshaft's ends to detect any deflection. The Commission concludes that CP&L personnel working on the camshaft project either knew or should have known that removal of two adjacent bearings would have reduced the support to the camshaft or, at the very least, that the work order specified removal of every other bearing for some reason.

The Commission further concludes that the maintenance crew's reliance on the technical representative's suggestion to remove adjacent bearings #8 and #9 does not relieve the Company of its responsibility for the removal of the adjacent bearings. Our Supreme Court has already stated that "a utility cannot insulate itself from responsibility... by delegating decision-making authority to a third party." Hamm, *id.* at 478.

The Commission finds that its conclusions in Order No. 91-819 are more than adequately supported by its findings and the evidence to which the Order specifically referred. In addition, the Commission notes that in its enforcement conference with the Nuclear Regulatory Commission (NRC), CP&L stated that repairs to the diesel generator were necessitated by "improper actions" and that the "root causes" of the actions were that (1) the [t]echnical [r]epresentative did not caution the mechanics; (2) the "[t]echnical [r]epresentative [was] not required to be present," and (3) "work proceeded without revising the work instructions." Hearing Exhibit 10. The Commission finds that this evidence also supports its conclusion that unreasonable actions on the part of CP&L caused the diesel generator outage.

Moreover, evidence indicates that the Company recognized its written work instructions were insufficient, particularly because these diesel generator repairs had never been made at Brunswick. Additionally, CP&L documentation recognized that there was a perceived need on the part of the mechanics to proceed quickly with the bearing replacement because of the Units' technical specifications. Hearing Exhibit 6.

Assuming that removal of the adjacent bearings caused the damage to the magnetic speed probe and that this damage ultimately damaged the camshaft,⁶ the Commission again concludes that unreasonable actions on the part of the Company and its vendor technical representative caused the diesel generator outage. CP&L personnel were instructed to remove every other bearing. During the day shift mechanics were stationed at the end of camshaft to detect any deflection caused by their work. Clearly, CP&L personnel either knew or should have known that the work order instruction and their monitoring of the camshaft was for a reason. As recognized by the Company, the instruction in the work report to remove every other bearing and to work in accordance with the directions of the technical representative incorrectly "created a reliance on the technical representative whose actions led to a perception that the WR/JO restriction was no longer applicable." Hearing Exhibit 6. Moreover, the Company's documentation indicates that "[s]upervision did not make it clear to the mechanics and

6. As noted in Order No. 91-819, there is some discrepancy as to the actual cause of the diesel generator outage. Order, p. 26.

leads that in performing work in accordance with the technical representative they also had to comply with the restrictions in the WR/JO and, in the event of a conflict, the WR/JO instructions had to be reviewed and revised as appropriate before work proceeded." Hearing Exhibit 6. While the mechanics may have technically followed the instructions of the work report, the Commission finds that the mechanics should have known not to follow the representative's instruction to remove the adjacent bearings and that the substantial evidence of record supports this conclusion.

The Commission also disagrees with CP&L's argument that because neither the vendor technical representative nor the mechanics knew that the magnetic speed probe was located in the camshaft gear housing, the Company cannot be responsible for its damage. The evidence of record indicates that the technical representative apparently thought the speed probe was in "its normal location... on the main shaft flywheel." Hearing Exhibit 6. Particularly because this was the first time the Company had made these repairs to the camshaft, the Commission concludes it was unreasonable for CP&L to remove the adjacent bearings without ascertaining the location of the speed probe.

Finally, the Commission finds that it was necessary to remove adjacent bearings #8 and #9 to perform the work to the camshaft. However, as stated by CP&L witness Coats, the mechanics should have removed the speed probe before removing and replacing the bearings. TR. Vol. 4, p. 33, lines 3-6.

5. CP&L contends that, should it continue to disallow the

excess fuel replacement costs associated with the diesel generator outage, the Commission should not disallow fuel replacement costs for the three week period during which the Company conducted miscellaneous performance testing which it had scheduled for a future outage in June 1991. Specifically, CP&L asserts that the Commission inaccurately stated witness Walsh's testimony and failed to consider Walsh's statement that conducting the performance testing while the plant was down was "a very prudent action." TR. Vol. 4, pp. 148-149. The Commission disagrees.

In regard to the scheduled performance testing the Commission found as follows:

Prior to the forced diesel generator outage CP&L had scheduled three weeks of required performance testing for June 1991, but had asked the NRC to waive the testing. When Brunswick Units 1 and 2 were down as a result of the diesel generator outage, CP&L conducted the performance test. On cross-examination, Walsh was asked whether any disallowance for the diesel generator outage should be reduced by the three weeks of performance testing conducted by CP&L during the outage. Walsh responded that on seven occasions other electric utilities had requested the NRC waive performance testing and that on each of these occasions the NRC had granted the waivers. Walsh stated that, based on this knowledge, it was likely that CP&L would have received a waiver of the June performance testing. Walsh explained that, in his opinion, the performance testing during the forced outage did not eliminate the need for a scheduled outage because it was unlikely the outage would have occurred in June and, therefore, the Commission should disallow the full extent of the diesel generator outage.⁷ Order No. 91-819, P. 13.

The Commission concluded as follows:

While CP&L had not yet heard from the NRC on its request to waive the performance testing scheduled for

7. Nucor witness Hobbs' testimony supports Walsh's testimony. Hobbs, Pre-filed testimony p. 15, line 21-p. 16, line 19.

June 1991 and decided to conduct the testing during the outages, the Commission is not convinced that by conducting the performance tests during the diesel generator outages CP&L eliminated the need for a future outage in June. The Commission finds witness Walsh's testimony that CP&L would have most likely received a waiver because of the NRC's record on waiver requests persuasive. Order p. 26-27.

The Commission finds that its conclusion not to give CP&L "credit" for the performance testing was proper. The only evidence of record indicates that the NRC would most probably have granted CP&L a waiver of its performance testing. CP&L did not offer any evidence to the contrary.

Moreover, the Commission agrees with Walsh's assessment that it was "very prudent" of the Company to conduct the performance testing while the units were down. While the Commission finds that the Company was "prudent" by taking advantage of a forced outage and conducting testing, it nonetheless concludes that the performance tests would not have been required in June and, therefore, the Company is not entitled to an offset of the fuel disallowances for the three week period of testing.

6. CP&L contends the Commission erred by disallowing 87.12 hours for the generator relay outage at Brunswick Unit 1. CP&L asserts that only 30 hours of the outage was caused by its admittedly unreasonable act and that the remaining 57.12 hours were the result of equipment failures. The Commission disagrees.

The evidence of record indicates that, after it was calibrated, a CP&L technician failed to return the generator relay from the calibration mode to the operational mode. Upon being

returned to service the generator relay, set in the calibration mode rather than the operational mode, caused a scram. When CP&L attempted to restart the unit, one of the recirculation pump discharge valves would not open. CP&L replaced the valve's motor operator and the plant was returned to service. CP&L witness Coats testified that "[s]ince the cause of the automatic shutdown was immediately known, we would have been able to begin startup immediately in the absence of other equipment problems. Under these conditions, the plant could have returned to service in approximately 30 hours." Coats, Pre-filed testimony, p. 25.

The Commission concluded and continues to find that CP&L should not be permitted to recover the fuel costs associated with the full extent of the outage. The evidence at the hearing indicates that repair of the recirculation pump discharge valve was in fact necessary before the plant could be returned to service. Replacement of the valve's motor operator was the direct result of the scram. Because a negligent person is responsible for all natural and probable consequences of his negligent action, the Commission finds it properly disallowed the fuel costs for the full extent of the generator relay outage. See, Greenville Memorial Auditorium v. Martin, __S.C.__, 391 S.E.2d 546 (1990).

7. CP&L claims that some of the Commission's calculations of the disallowances are in error. Specifically, CP&L contends that the Commission should have used a planning capacity factor of 80% at Robinson Unit 2 instead of 85%, erred by not considering the hour lost by conversion to Daylight Savings Time, utilized an

outdated South Carolina retail allocation factor of .14998 instead of .14425, and did not use appropriate coal and nuclear fuel costs. The Commission disagrees.

The Commission used the same method and numbers used by Staff witnesses Walsh and Watts in the calculation of their recommended disallowances. The Company did not challenge Walsh or Watts' computation.⁸ Accordingly, the substantial evidence in the record fully supports the computation used by the Commission in calculating its disallowance.

8. CP&L contends the Commission erred in its calculation of the disallowance for the unlatched control rod outage at Robinson Unit 2. The Company asserts that the Commission's calculation of this disallowance is inconsistent with the method it has historically used to calculate other disallowances. The Commission disagrees.

CP&L witness Coats testified that the unlatched control rod event extended the scheduled outage at the Robinson Unit 2 by 25 days. Coats, Pre-filed testimony, p. 12. CP&L's Final Outage Report for the 1990 refueling outage, however, states that the unlatched control rod extended the outage by approximately 20 days. Hearing Exhibit 22. Nucor witness Hobbs testified that, in seeking to recovery on a warranty claim from its contractor, CP&L admitted

8. Moreover, the Commission utilized the same South Carolina retail allocation factor of .14998 in the last two fuel proceedings. See, Order No. 91-636 (August 6, 1991), Docket No. 91-3-E, and Order No. 90-961 (October 18, 1990), Docket No. 90-4-E. CP&L did not challenge the use of the factor in those Orders.

\$5,625,000 was the replacement power cost. Hobbs, Pre-filed testimony, p. 22. Although CP&L cross-examined Hobbs on his claim that the unlatched control rod was caused by an unreasonable act of the Company, CP&L did not question Hobbs on his quantification of the disallowance for the unlatched control rod.⁹ TR., Vol. 4, p. 98, line 6-p. 102, line 12. The Commission ultimately adopted Hobbs' quantification.

The Commission concludes that it properly adopted the quantification submitted by witness Hobbs. The Commission found that Hobbs' quantification was reasonable, particularly because it was based on numbers generated by CP&L for negotiation with its contractor. Moreover, there were discrepancies between CP&L's witness' testimony and its Final Outage Report in regard to the extension of the outage by the unlatched control rod.


Finally, although the methodology used by Hobbs in calculating the disallowance for the unlatched control rod may not have been consistent with the Commission's historic method for the calculation of disallowances, CP&L has failed to establish or to convince the Commission that the amount of the disallowance, which

9. The Staff witnesses did not recommend a disallowance for the unlatched control rod. Accordingly, there is no Staff quantification for the unlatched control rod in the record.

was determined by the Company itself, is improper. Accordingly,
the Commission denies the Petition for Rehearing and
Reconsideration on this issue.

IT IS SO ORDERED.

BY ORDER OF THE COMMISSION:


Chairman

ATTEST:


Executive Director

(SEAL)